



Installation Guide & User Manual

SoundPlus® Two-Channel Infrared System

Large Area Infrared Listening System

Modulator Model WIR MOD 112
Transmitter Model WIR TX6
Receiver Models WIR RX5, RX6





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Installation Guide and User Manual

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Note: Taking a few minutes now to read these instructions will save time and ensure proper system operation.

NOTICE

Infrared receiver performance can be degraded if this system is used in close proximity to high-efficiency lighting equipment with solid state ballasts (i.e. high frequency fluorescent).

System Overview

The Williams Sound Two-Channel Infrared System, Model TX600 consists of a MOD 112 Modulator and one or more TX6 Transmitters (also called emitters) which use invisible infrared (IR) light waves to broadcast speech or music to wireless infrared receivers.

The MOD 112 accepts a variety of audio inputs and sends 95 kHz and 250 kHz frequency modulated signals to the TX6 Transmitter via a coaxial cable. The transmitter emits invisible infrared light into the listening area. Infrared receivers detect the transmission and convert the light signals back into audio signals.

The system is designed to transmit high quality audio for hearing assistance and language translation applications. Because the system uses infrared light for transmission, it is not affected by interference

from radio equipment and does not interfere with radio equipment. No FCC license is required.

A single TX6 Transmitter will cover up to 10,000 square feet of listening area in single channel mode and 5,000 square feet in two channel mode. Larger areas can be covered with additional transmitters. The transmission is confined within opaque walls, making it especially appropriate for applications in which security is an issue, such as courtrooms and corporate boardrooms. The Williams Sound Infrared System is also commonly used where multiple systems are needed in adjacent rooms, such as movie theaters and conference centers, without “spillover” from adjacent rooms.

The system can be used with a microphone as a stand-alone system, or it can be connected to an existing sound system. Infrared Systems cannot be used in bright sunlight, which contains large amounts of interfering infrared light.

Fig. 1a: One Modulator / One Transmitter

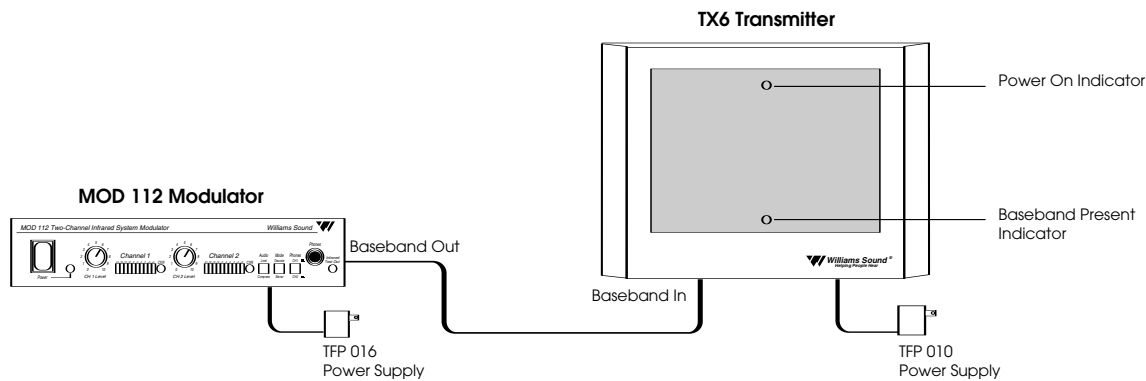
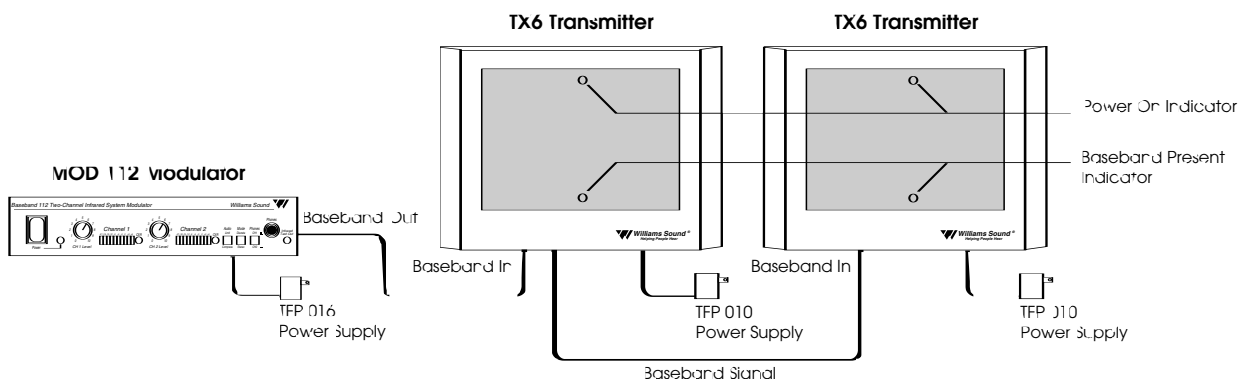


Fig. 1b: One Modulator / Two Transmitters



Installation Procedures

Installation Step 1: TX6 Transmitter Set-Up

Selecting a Mounting Location

The most important principle to understand when installing an infrared system is that invisible infrared light behaves just like visible light. It does not pass through opaque objects such as walls, curtains, or people. It does pass through windows and door openings and can bounce and scatter off reflective walls, floors, and ceilings. The IR transmitter panels cannot be concealed or covered up, nor can the infrared “eye” on receiver units. Receivers work best with a clear line-of-sight to the transmitter panels.

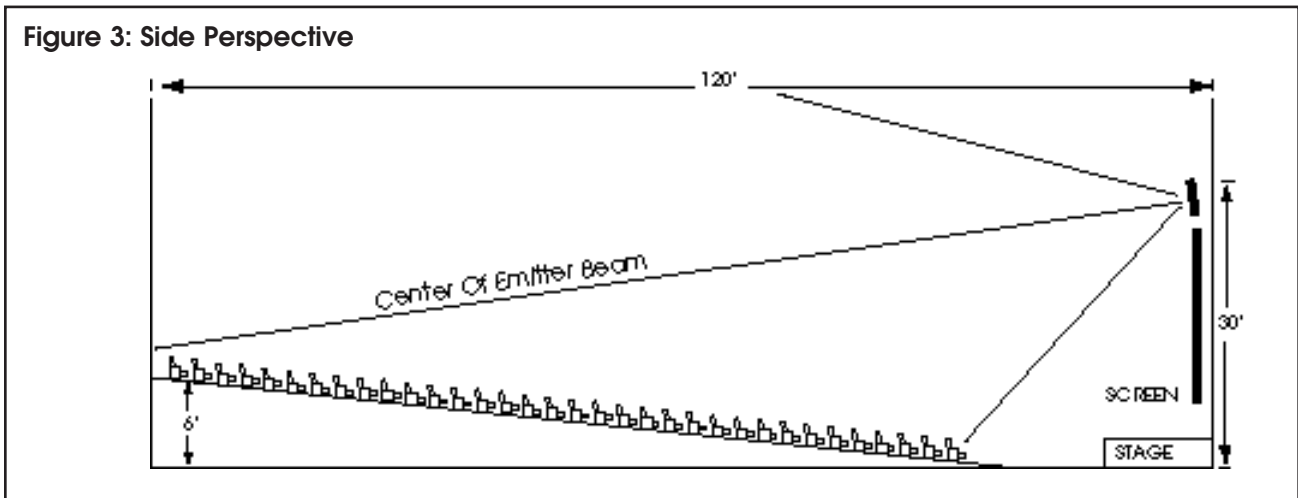
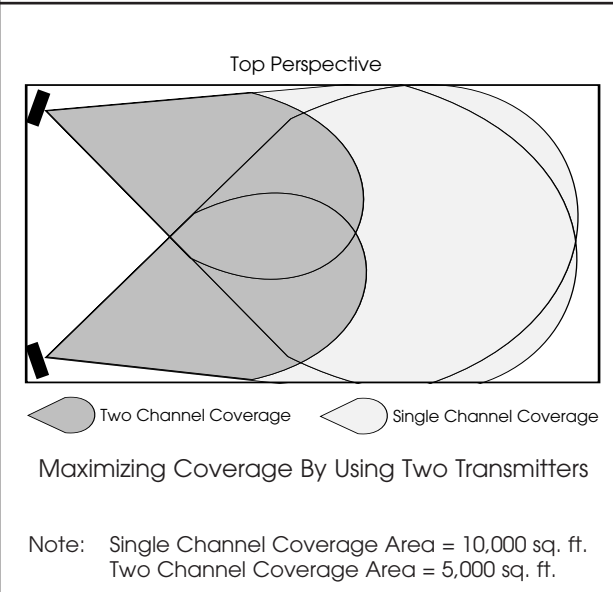
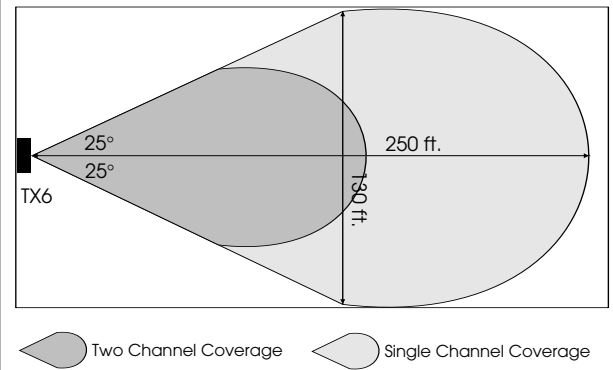
The TX600 Two-Channel Infrared System should not be installed outdoors or indoors where there is considerable direct sunlight. Sunlight generates infrared interference. Certain types of high-efficiency lighting fixtures can also generate interference because they use high frequency modulation.

Illumination Patterns

The infrared illumination pattern from a single transmitter is cone-shaped, with a 50° angle. The horizontal and vertical patterns are identical. Figures 2 and 3 show examples of coverage patterns.

These patterns are the direct radiation pattern. The infrared radiation does not drop to zero outside the illustrated patterns; it decreases. It still may be useable at a greater distance, depending on receiver sensitivity and reflection characteristics of the room.

Figure 2: Infrared Illumination Patterns



Infrared light reflects off most surfaces and scatters, which increases the coverage area. Rough surfaces tend to absorb infrared light, minimizing reflections, and limiting coverage to the direct illumination pattern.

It's helpful to think of the IR transmitter as an invisible floodlight. You want to aim it so listeners are "flooded" with infrared light.

It's desirable for the illumination patterns to overlap when multiple transmitters are used. Placing the transmitters high above the audience (15–30 ft.) and aiming them slightly downward (5°–15°) will ensure the longest "throw" of the infrared beam. Angling the transmitter inward towards the center of the room also increases the coverage of the seating area.

Remember that opaque objects block the infrared light. Thus, transmitters cannot be concealed behind an opaque walls, curtains, etc. Neither should transmitters be used in areas of extreme high or low temperatures, humidity, or chemical environments.

Coverage Area

The TX6 Transmitter is designed to distribute its power equally among the channels sent to it for transmission. Thus, when only a single channel is present, the TX6 uses all its power to broadcast the lone signal, achieving a coverage area of approximately 10,000 square feet. When two signals are sent to the TX6 (as is the case when the MOD 112 is in Stereo mode or in Discrete mode when both channels are in use), the TX6 divides its power equally among the two signals. This makes for a coverage area of about 5,000 square feet. This important principle is illustrated in Figure 2.

If you're not getting sufficient coverage with a single, properly installed transmitter panel, you'll need to add additional TX6 Transmitters to achieve full coverage of your listening area.

Figures 2 and 3 illustrate infrared light patterns and recommended transmitter locations. In listening areas up to 5,000 square feet, the TX6 Transmitter panel should be installed on the front wall of the listening area in a position to flood the listening area. It must be above the audience to permit a direct line of sight between the transmitter and people wearing receivers when the people are standing or sitting.

Listening areas of more than 5,000 square feet will require two or more TX6 Transmitters for complete coverage. Place one transmitter panel on the left side of the front wall and the other on the right hand side. The two transmitters will be connected with an RG-58 cable. For extremely large venues, additional TX6s should be located to maximize coverage throughout the listening area.

Installation Step 2: TX6 Power Wiring

For U.S. Applications:

The TX6 Transmitter is supplied with a low-voltage wall transformer power supply (TFP 010). Two-conductor 18 ga. zipcord is included with the transmitter.

For Applications Outside The U.S. Requiring 240 VAC Mains Supply:

See page 18.

WARNING! Shorting the power supply output terminals will blow a non-replaceable internal fuse, destroying power supply unit!

DO NOT CONNECT THE POWER SUPPLY TO AC POWER YET!!!

Step 1: Determine the length of zipcord needed to reach from the transmitter to the AC wall outlet where the power supply will be plugged in. Zipcord length must not exceed 200 feet.

One end of the zipcord has a 3-pin Molex connector, the other end is bare. Cut the bare end of the zipcord to length. Strip this end down the middle approximately 1 inch, then strip both of the resulting strands about 1/8 inch. Install the crimp-on spade terminals supplied and connect these to the screw terminals on the TFP 010 Power Supply. Polarity is not important since AC power is being used.

Step 2: Plug the 3-pin connector into the TX6's Power In connector.

Step 4: Plug in the TFP 010 Power Supply

The Power Indicator LED in the top center of the front panel glows when the TX6

Figure 4: Mounting The TX6

The TX600 Two-Channel Infrared System includes a kit for mounting the TX6 to a wall or ceiling.

1. Use the 5/32" allen wrench to loosen the tension bolt in the clamp assembly enough to release the ball. DO NOT unscrew the tension bolt completely. Using the mounting plate as a template, mark the hole locations on the mounting surface. Use fasteners appropriate for the mounting surface (wood screws, lag bolt, wall anchor) to attach the mounting plate. Recommended fastener size is 1/4".
2. Attach the clamp plate to the rear of the transmitter, using (2) 1/4 x 20 x 1/2" socket head screws and 3/16 hex wrench provided. Place the mounting plate in the position indicated for ceiling or wall mounting.
3. Place the transmitter/clamp plate assembly onto the the mounting plate ballshaft. Aim the transmitter at the desired downward angle and support it fully while using the hex wrench to tighten the tension screw. After initial installation, the ball will slowly compress under pressure. Check the tension screw after 15 minutes and re-tighten if necessary. DO NOT over-tighten.

If rotational adjustment is required, used a 7/16" open-end wrench to loosen the jam nut on the ballshaft. Rotate the transmitter and re-tighten the jam nut.

Fig. 4a: SB-3 Wall/Ceiling Mount

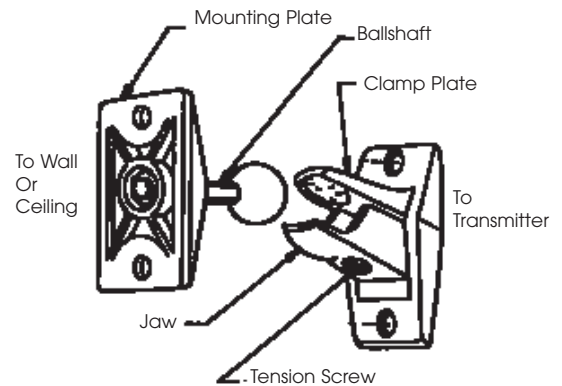


Fig. 4b: Bracket 012 Ceiling Mounting

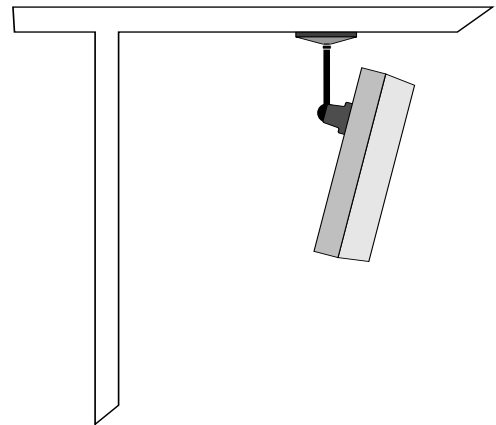


Fig. 4c: Bracket 012 Wall Mounting

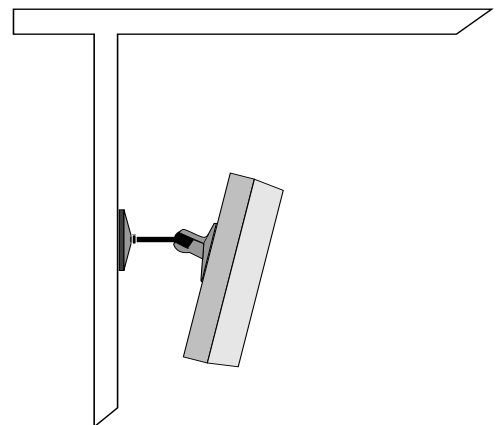
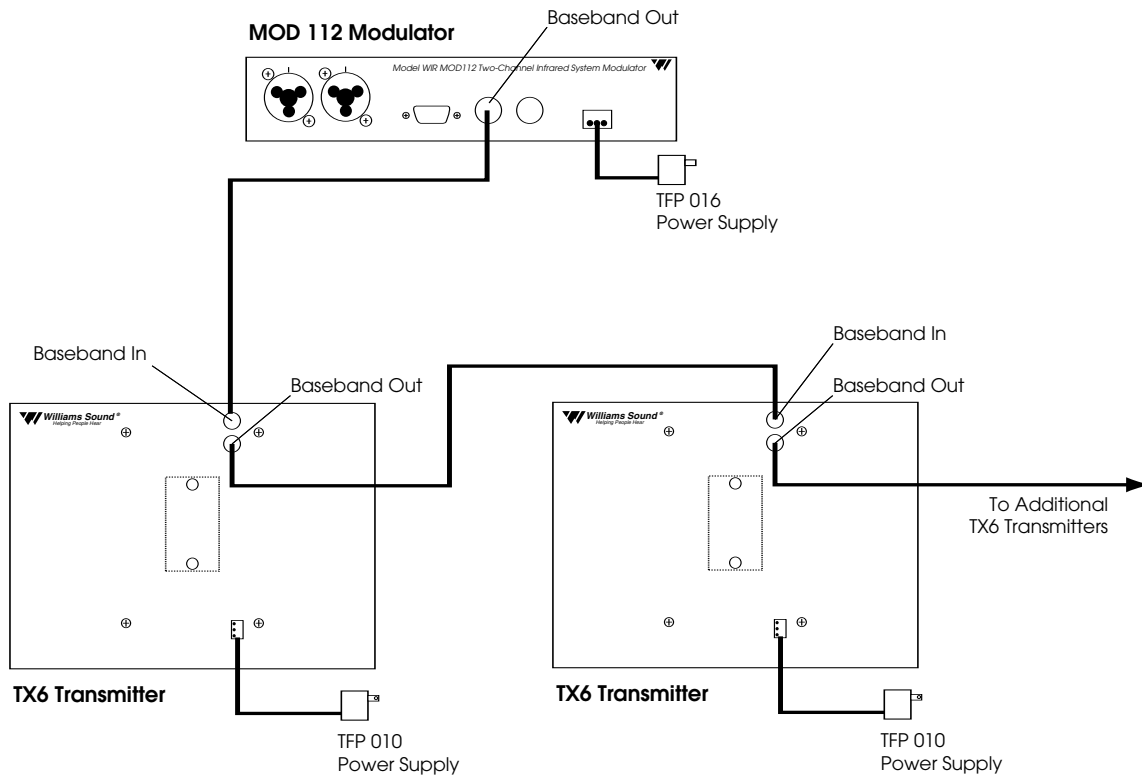


Figure 5: TX6 Transmitter Wiring Detail



is on. The Baseband Indicator LED is located in the bottom center of the TX6 front panel and glows when a baseband signal is present.

Note: The TX6 transmits when a baseband signal is present. The TX6 shuts off when no baseband signal is present. This auto shut-off feature preserves the life of the IR LED's and reduces power consumption when the transmitter is not in use.

This system is designed for Class 2, low-voltage wiring. Always follow local electrical codes when doing low voltage wiring.

Installation Step 3: Baseband Cable Connection

If You're Using One Transmitter:

- Step 1: Determine the length of RG-58 coaxial cable needed to reach from the transmitter to the modulator unit. The modulator is usually located with the other sound equipment to simplify audio connections. 100 feet of coaxial cable is included with each transmitter. You will need to cut it to length. Additional RG-58 coax can be added. Make sure you leave some slack at each end.
- Step 2: Install BNC connectors on each end of the cable. (See Figure 6.)
- Step 3: Connect the Baseband cable to the Baseband Out jack on the MOD 112 modulator and to the Baseband In jack on the TX6 transmitter. (See Figures 5 and 7.)

If You're Using More Than One Transmitter:

- Step 1: Determine the length of coaxial cable needed to reach between the transmitters. 100 feet of coaxial cable is included with each transmitter. You will need to cut it to length. Additional RG-58 coax can be added. Make sure you leave some slack at each end.
- Step 2: Install BNC connectors on each end of the cable. (See Figure 6.)
- Step 3: Connect the baseband cable from the Baseband Out Jack on the first transmitter in the chain (the one connected to the MOD 112 Modulator) to the Baseband In jack on the next TX6 transmitter in the chain. Use the cable clamps and screws provided to secure the cable. The coax can also be routed through conduit before attaching BNC connectors. You can chain as many transmitters together as you need. Remember that each transmitter needs its own power supply.

Installation Step 4: MOD 112 Modulator

Location

The Modulator is usually located with the sound system amplifier or mixer for easy access to an audio input signal. For portable systems, the modulator can be placed near the transmitter or wherever is most convenient.

Power Connection For U.S. Applications:

- Step 1: Connect the power supply to the 3-pin Molex connector located on the rear of the MOD 112. (See Figure 7.)
- Step 2: Plug the power supply into an AC outlet.

Power Connection For Applications Outside The U.S. Requiring 240 VAC Mains Supply:

See page 18.

Baseband Cable Connection

The MOD 112 drives one transmitter. The TX6 repeats the baseband signal, so any number of transmitters can be used. The modulator outputs CAN-NOT be split with CATV splitters.

Audio Connection

The MOD 112 accepts audio signals from industry standard low impedance microphones, balanced, and unbalanced lines.

Microphones

An industry standard 3-pin male connector is used. Pin 1 is the shield and pins 2 and 3 are audio. Power for condenser microphones is supplied according to DIN 45596.

Balanced Lines

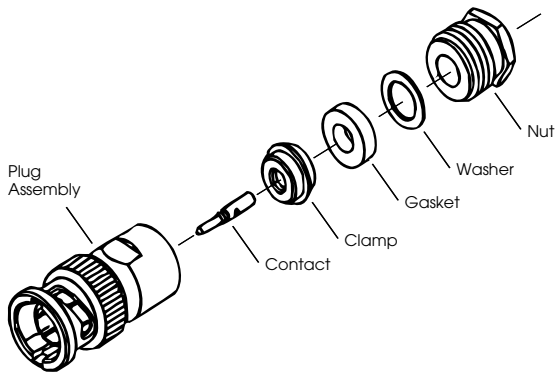
A 1/4 inch Tip-Ring-Sleeve (3 conductor) phone plug is used. The three-pin connectors are used for mic inputs only.

Unbalanced Lines

A 1/4 inch Tip-Sleeve (2 conductor) phone plug is used.

8 Ohm speaker lines can be connected to the balanced line inputs. Usually it is advantageous to not connect to the sleeve of the plug, thus avoiding creating a ground loop.

Figure 6: BNC Connector Assembly

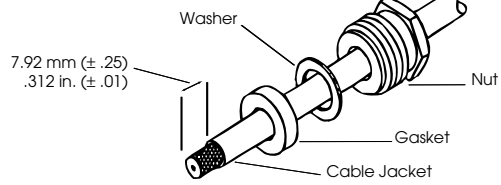


Assembly Procedure

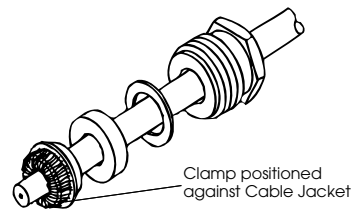
The BNC Connector consists of a plug assembly, a contact, a clamp, a gasket, a washer, and a nut.

1. Slide nut, washer and gasket over cable end; then strip outer cable jacket using the recommended strip-length dimension in fig. 6b.
 2. Slide clamp over cable braid and position it against the cable jacket. After clamp is properly positioned, comb out the braid.
 3. Fold cable braid over the clamp and trim it so that it is positioned against the clamp collar. See figures 6c and 6d.
 4. Using the dimension in figure 6e, strip dielectric to expose the center conductor. If applicable, tin the center conductor.
 5. Solder contact to the conductor (using standard soldering techniques), making sure contact is bottomed on cable dielectric. See figure 6f.
- DO NOT allow a hot soldering iron to touch cable dielectric. Certain cable dielectric materials, such as polypropylene, will expand if they come in contact with a hot soldering iron.
6. Insert contact into plug assembly until contact snaps into place. See figure 6g.
 7. Thread nut into plug assembly until it is secured. Recommended cable clamp tightening torque is 2.8–3.4 N•m [25–30 in.-lb.], using a 7/16" wrench. See figure 6h.

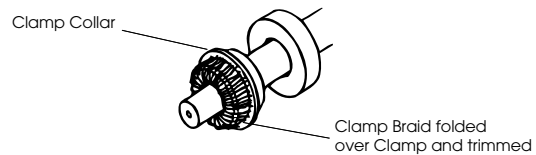
6b



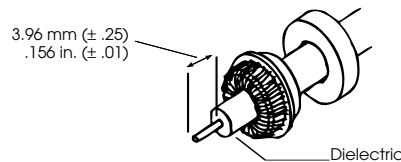
6c



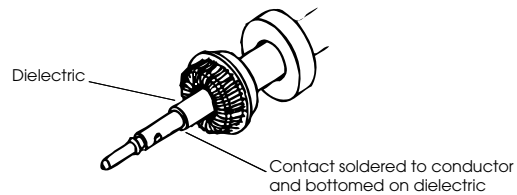
6d



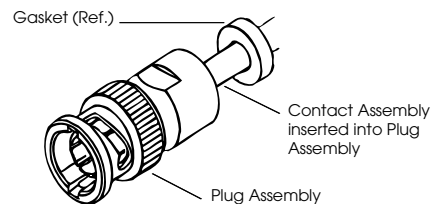
6e



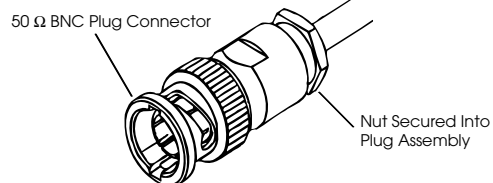
6f



6g



6h



25 V, 70 V, and 100 V speaker lines can be connected to the balanced line inputs using an appropriate attenuator. “T” pads made with resistors yield better fidelity than speaker matching transformers.

The MOD 112 transmits audio with excellent fidelity. Therefore, be sure to connect its inputs to signal sources that supply audio that is the best your system can offer. The signal should not be processed by an equalizer used for an accompanying PA system. The MOD 112 has excellent signal processing, so the use of additional limiters or compressors is not recommended.

Installation Step 5: Testing the System

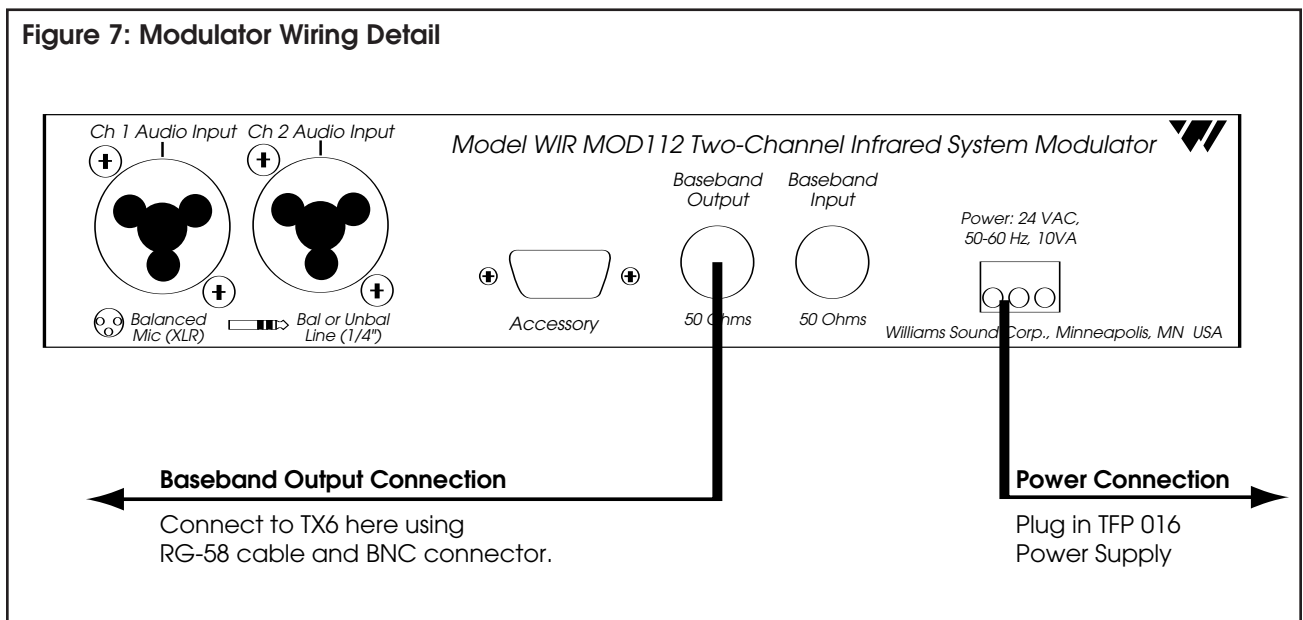
Step 1: After the baseband cable, power cables, and audio source are connected, turn the MOD 112 power switch on. The green power LED on the front of the MOD 112 should light.

Step 2: Make sure the sound system is on and your audio source is active. Check the quality of your audio source signal by listening through the Phones jack on the MOD 112’s front. The MOD 112’s 10-segment bar graph level indicator shows audio level in 3 dB steps at input of audio level processing circuit.

Step 3: Look at the transmitter panel(s). With the modulation signal and power connected, two red lights should be visible on the the panel—the power indicator at the center top and the baseband indicator located at the center bottom.

Step 4: Hold a receiver near the “Infrared Test Out” LED on the front of the MOD 112. Turn the receiver on and adjust the volume. You should be able to hear the audio signal through the receiver. If not, make sure the CXR On Indicator is lit and there is activity on the Level Indicators. If the lights are not flashing, check your audio source or the setting of the input level switch and input level control. If the audio lights are flashing, but you don’t hear anything from the receiver, try a different receiver to be sure the receiver is working.

Step 5: Take a receiver into the listening area and walk around to check the reception. Make sure the “eye” on the receiver is not covered up when in use. The receiver will not work if it is placed in a pocket or purse and its eye must be able to “see” the transmitter panel. It may be necessary to adjust the angle of the transmitter(s) to obtain the best coverage. If coverage is not adequate, additional transmitter panels must be used.



Controls and Features

MOD 112 Front Panel

Power Switch

Turns the entire system on and off. The associated wall mounted power supply stays on at all times and may operate continuously. There is no “wear out” mechanism.

Power On Indicator

Indicates actual operation of modulator. Does not indicate status of power supply.

Level Control

Controls level of audio signal for the associated channel. Control is connected between the input amplifier and the audio level processing circuit.

Channel 1 and 2 each have individual Level Controls, Level Indicators and Carrier On Indicators. They function independently and identically for each channel.

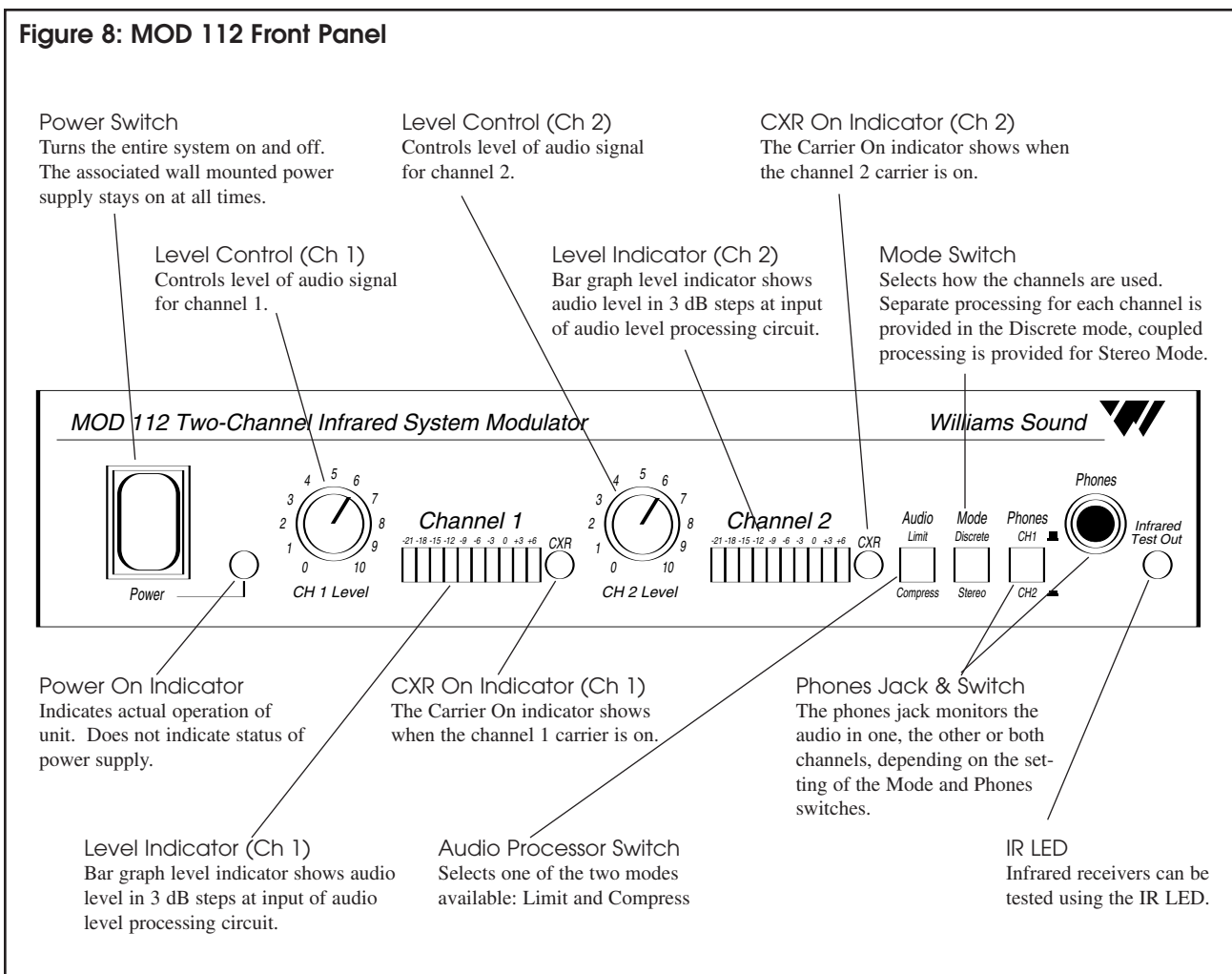
Level Indicator

Bar graph level indicator shows audio level in 3 dB steps at input of audio level processing circuit. Indicator is peak responding and is calibrated so that optimum level is reached when the amber +3 light usually blinks and the red +6 light only blinks occasionally.

CXR On Indicator

The Carrier On indicator shows when the associated carrier is on. Carriers come on when power is applied, but go off automatically if there is no audio for approximately 30 minutes. Audio sufficient to light the -21 level indicator light will reset the timer,

Figure 8: MOD 112 Front Panel



allowing another 30 minutes before the carrier can again go off.

After the carrier has automatically gone off, audio sufficient to light the -21 level indicator light will turn the carrier back on immediately.

Audio Processor Switch

Selects one of the two modes available.

Limit Mode

The audio processor has little effect on low level sound. As the level increases, reaching the level to light the red +6 light on the level indicator, no further increase in transmitted level is permitted. This is necessary to prevent distortion in receivers and prevent interference with other channels. Limit produces a very natural sound, and is most desirable for music. High quality speech is very pleasant to listen to. However, Limit is not as helpful for hearing impaired individuals as Compress mode.

Compress Mode

At high levels, 0 to +6, Compress is very similar to Limit. But at low levels Compress increases the volume substantially. Hearing impaired people need an increase in low level to be able to hear most speech.

Compress is most useful for hearing impaired individuals and where the input signal is poorly controlled or has great dynamic range.

Mode Switch

The Mode Switch selects how the channels are used. Separate processing for each channel is provided in Discrete mode, where the two channels have unrelated program material such as two different languages. Coupled processing is provided for Stereo mode, where the program material is related.

Discrete Mode

The channels operate fully independently. Carrier timers operate separately, allowing one channel to go off without affecting the other. The Phones jack receives one or the other channel, as selected by the Phones switch. Both channels of the Phones jack have the same signal.

Stereo Mode

Audio processing is coupled, providing a consistent stereo image, important when listening with headphones. Carrier timers are coupled, requiring both to have reached approximately 30 minutes before either carrier can go off. Both carriers go off and on together. The Phones jack receives stereo sound, one channel in the left side and the other channel in the right side. The Phones switch is deactivated.

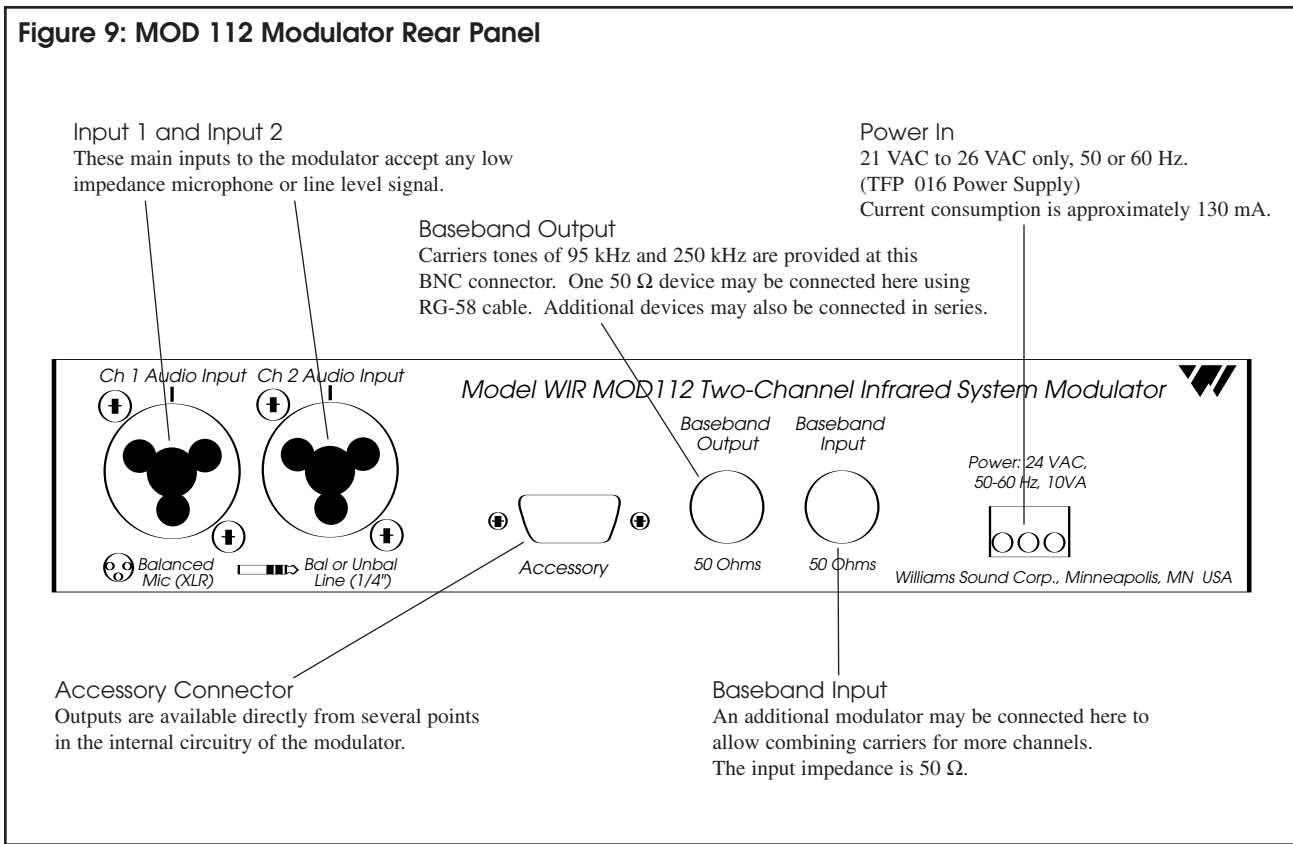
Phones

The phones jack monitors the audio in one, the other or both channels, depending on the setting of the Mode and Phones switches. It is designed to accommodate standard professional headphones with a 1/4 inch Tip-Ring-Sleeve (Stereo) plug. Channel 1 is on the Tip, channel 2 is on the ring and the sleeve is common. It can also accept any other type of headphone or earphone. Monophonic headphones are acceptable, however will not provide stereo reproduction. Headphones with 3.5 mm plugs can be used with a 1/4 inch to 3.5 mm adapter. If 3.5 mm stereo phones are used, a stereo adapter is required.

IR LED

Infrared receivers can be tested using the IR LED. It is of short range only, useful only to about 1 meter. Infrared emitted from this LED is modulated by the carriers generated in this unit only. If this modulator is connected to other modulators for additional channels, their carriers are not emitted by the LED, and must be monitored at those modulators.

Figure 9: MOD 112 Modulator Rear Panel



MOD 112 Rear Panel

Input 1 and Input 2

The two main inputs to the modulator accept any low impedance microphone or line level signal. The input circuit is constructed with a “studio grade” differential amplifier, providing better performance than that which is available with a transformer while still being fully protected from RFI/EMI.

Microphone

Any dynamic, ribbon or condenser microphone equipped with a balanced output and a 3 pin XLR connector can be used. Power is supplied for condenser microphones according to DIN 45596. It need not be turned off for dynamic or ribbon mics. Microphones with two conductor 1/4 inch plugs are not usable.

The minimum acceptable level is approximately 100 μV, and the maximum level before clipping is approximately 90 mV.

Line

Both balanced and unbalanced line level signals can be accommodated. The minimum acceptable level is approximately 100 mV, and the maximum level before clipping is approximately 10 V.

25 V, 70 V, and 100 V speaker distribution lines can be connected to the Line input using attenuators made with resistors or with speaker matching transformers. Resistor attenuators yield better results. The minimum acceptable level is approximately 100 mV, and the maximum level before clipping is approximately 10 V.

Accessory Connector

Outputs are available directly from several points in the internal circuitry of the modulator. They are from the output of the differential amplifiers for the main inputs and from the output of the audio processing circuits. The outputs are isolated from internal circuits and may be used as the installer requires.

Baseband Output

Carrier tones of 95 kHz and 250 kHz are provided at this BNC connector. One 50 Ω device may be connected here using RG-58 cable. Additional devices may be connected by “looping through” the connected device or by means of a suitable distribution amplifier. The output impedance is 50 Ω . Frequency accuracy is approximately $\pm .005\%$. Deviation is ± 50 kHz, maximum. Average deviation is dependent on program material and whether Limit mode or Compress mode is selected.

Baseband Input

An additional modulator may be connected here to allow combining carriers for channels in addition to 95 kHz and 250 kHz. The input impedance is 50 Ω .

Power In

21 VAC to 26 VAC only, 50 or 60 Hz. (TFP 016 Power Supply) Current consumption is approximately 300 mA.

TX6 Transmitter

Power Input

Three-pin connector for TFP 010 power supply.

Power Indicator LED (front panel)

Located on the front panel in the top center of the LED window. Red indicator light glows when power is on.

Note: The TX6 shuts off when no baseband signal is present.

Baseband Indicator LED (front panel)

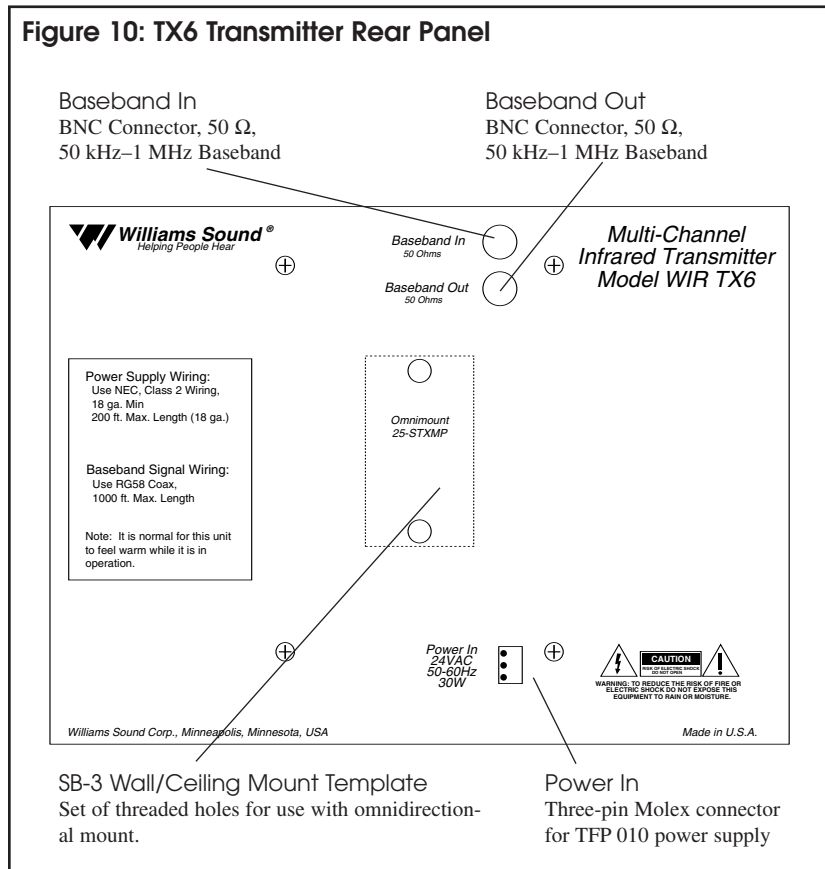
Located on the front panel in the bottom center of the LED window. Red indicator light glows when baseband signal is present.

Baseband In:

Connects to the Baseband Out jack of the MOD 112 modulator or another TX6 transmitter.

Baseband Out:

Connects to the Baseband In jack of the next TX6 transmitter in the chain when multiple transmitters are used.



SB-3 Wall/Ceiling Mount Template:

An omnidirectional mounting bracket is included with the Transmitter. An optional tripod stand kit is also available (WSC Part #SS-2).

Receiver Instructions

Two Channel IR Receiver Model WIR RX5

Make sure the “eye” on the front of the receiver is not covered up when in use. The receiver is intended to be worn on the front of the body, hanging from the lanyard attached to the receiver. The receiver will not work if it is placed in a pocket or purse. A variety of earphones, headphones, or a neckloop telecoil coupler can be used with the RX5 Receiver.

- Step 1: To install the batteries, open the battery compartment using a coin in the slot in the bottom of the receiver. Press two AA batteries into place, observing proper battery polarity.
- Step 2: Plug the earphone or headphone into the earphone jack.
- Step 3: Turn the receiver on by rotating the volume control knob clockwise.
- Step 4: Choose the appropriate channel using the push-button channel selector.
- Step 5: Adjust the tone to your preference using the slide switch tone control. To avoid draining the battery, make sure the receiver is turned off when not in use.

Stereo IR Receiver Model WIR RX6

Make sure the “eye” on the front of the receiver is not covered up when in use. The receiver is intended to be worn on the front of the body, hanging from the lanyard attached to the receiver. The receiver will not work if it is placed in a pocket or purse.

A variety of stereo earphones and headphones can be used with the RX6 Receiver.

- Step 1: To install the batteries, open the battery compartment using a coin in the slot in the bottom of the receiver. Press two AA batteries into place, observing proper battery polarity.
- Step 2: Plug the earphone or headphone into the earphone jack.

- Step 3: Turn the receiver on by rotating the volume control knob clockwise.
- Step 4: Adjust the tone to your preference using the slide switch tone control. To avoid draining the battery, make sure the receiver is turned off when not in use.

Battery Information for Receivers

For RX5 and RX6 Receivers in normal use, a AA alkaline battery (BAT 001) will last about 30 hours. Rechargeable AA batteries will last about 15 hours per charge.

In the case of rechargeable batteries, most commercially available external charger kits will work well.

If the sound becomes weak or distorted, replace the batteries. The indicator light may still be on, even with weak batteries. Do not leave dead batteries in the receivers, they may leak and damage the receiver.

DO NOT attempt to recharge disposable batteries!

AVOID shorting plus and minus battery terminals together with metal objects. Battery damage and burns can result.

DO NOT mix rechargeable batteries and chargers from different manufacturers.

Receiver Management

Different types of facilities will use different approaches for receiver management and earphone sanitation. Following are some alternatives that other customers have used successfully:

1. Regular users purchase their own receiver and take care of their own batteries and earphone.
2. Some facilities label the receiver and earphone with the names of regular users so each person uses the same receiver and earphone.
3. Ushers issue receivers to people who request them. Earphones are sanitized after use. Foam ear cushions can be replaced or washed with a mild detergent, rinsed thoroughly and air-dried. The EAR 022 Surround Earphone can be sanitized with an alcohol pad.
4. The receivers are stored in a multiple compartment storage case with a credit card or driver's license left as collateral for the receiver.
5. Regular users purchase their own earphone or headphone and bring them to use with receivers at the facility.

Troubleshooting

Neither TX6 indicator light is on (Fig 1a).

1. Make sure the wall transformer is plugged into the transmitter and the power switch or any remote power switch is on.
2. Make sure the electrical outlet is on.
3. Make sure the 24 VAC power supplies are working.

Only one TX6 light (top) comes on (Fig 1a).

1. Make sure the MOD 112 is on.
2. Make sure the baseband cable is connected properly.
3. Check to see if that at least one carrier light on the MOD 112 is on.

No sound through receivers.

1. If some of the receivers work but others don't, check for bad batteries or earphones on the receivers that aren't working.
2. If none of the receivers work, check to see if the power and baseband cable are connected to the transmitter and that the Power and Baseband Present Indicator lights are ON.
3. Check to see if the modulator is connected properly to the sound system. The CXR On Indicator should be lit and there should be activity on the MOD 112's Level Indicators.
4. Make sure the "eye" is not covered up on the receiver. There must be clear line of sight between the receiver eye and the transmitter panel.

Sound through the receivers is weak and noisy.

1. Hold a receiver in front of the Infrared Test LED on the front of the MOD 112 modulator and listen to the signal. If the signal is weak and noisy here, check the Input Level switch and Input Level Control settings. Increase the input signal level from the sound system by turning up a mixer control. If the signal sounds okay, you may need to re-position the transmitter panels or add additional panels.

Buzzing or humming noise in sound system.

1. Check for ground loops or noise on the input signal. Call your Authorized Dealer or Williams Sound for help.

Warranty

Williams Sound Transmitters and Receivers are warranted against defects in workmanship and materials for FIVE YEARS. Microphones, earphones, cables, carry cases, rechargeable batteries and chargers are warranted against defects in workmanship and materials for 90 DAYS. This warranty does not extend to intentional or accidental physical damage. This warranty applies only to products returned to Williams Sound for service. To return a product for service, call the phone number below and request a Return Authorization (RA) number.

Williams Sound Corp.
10399 West 70th Street
Eden Prairie, MN 55344-3459 USA

Phone: 800-843-3544
612-943-2252

Fax: 612-943-2174

Power Connections For Applications Outside The U.S. Requiring 240 VAC Mains Supply:

MOD 112

Use an appropriate power adaptor supplied by the local distributor which meets the following Secondary Specifications:

24 VAC, 10 VA, 50/60 Hz

WIR TX6

Use an appropriate power adaptor supplied by the local distributor which meets the following Secondary Specifications:

24 VAC, 30 VA, 50/60 Hz

SoundPlus™ Multi-Channel Infrared System Specifications

Two-Channel Infrared Modulator, Model MOD 112

Dimensions, Weight:	8.45" (21.5 cm) W x 8.18" (20.8 cm) D x 1.72" (4.4 cm) H, 3 lbs. (1.5 kg)
Color:	Black epoxy paint with white legends
Rack Mount:	One IEC rack space high, one or two units can be mounted in a single rack space with optional RPK 005 (single) or RPK 006 (double) Rack Mount Kits
Power:	External power supply, 24VAC, 50 or 60Hz, 10 VA maximum
Baseband Output:	50 Ω source impedance
Carriers:	100 mV per carrier Channel 1: 95 kHz \pm 50 kHz deviation, 50 μ sec pre-emphasis Channel 2: 250 kHz \pm 50 kHz deviation, 50 μ sec pre-emphasis
AGC:	Variable slope compressor or soft limiter, switch selected
Carrier Timers:	One 30 minute (approx.) timer per channel. Turns off carrier if channel is silent (lowest light on bar graph does not light) for full 30 minutes.
Operating Req.:	0-50°C ambient temperature, non-condensing, non-corrosive atmosphere
Front Panel:	
Power Switch:	Two-position rocker, ON/OFF
Power Indicator:	Green LED
Audio Level Controls:	1 control per channel
Audio Indicators:	One (1) 10 LED bar graph per channel
Carrier LEDs:	1 carrier on indicator LED per channel, green
Limit/Compress Switch:	Selects variable slope compression or soft limiting
Stereo/Discrete Switch:	Selects stereo (coupled processing and timers, stereo monitoring) or discrete (Independent processing and timers, mono monitoring)
Phones Switch:	Selects CH 1 or CH 2 for phones when mode is in discrete position
Phones Output:	1/4" stereo phones jack. Produces stereo or mono output depending on mode selected. Accepts stereo or mono phones. Any impedance
Infrared Test LED:	IR LED for receiver testing, monitoring, and audio signal testing. Effective to about 2 feet from front panel
Rear Panel:	
Balanced (Floating) Line Input:	1/4" TRS jack. Accepts unbalanced or balanced line level inputs
Mic Input:	lo-Z, 100 μ V min. to 90 mV max. 1 mV nominal, 3 k Ω input impedance Supplies simplex power 20 V (DIN45296) for condenser mics
Baseband Output:	(1) BNC connector, 50 Ω , 100 mV RMS per carrier, use RG-58 cable
Baseband Loopthru Input:	(1) BNC connector, 50 Ω
Power Connections:	3-pin molex
Emitter Type:	For use with Williams Sound Linear Emitters. For multi-emitter systems, each emitter repeats the baseband signal to drive the next emitter in the chain.
Accessory Connector:	9-pin, Sub-D female, various circuit connections (See diagram on top panel for details)
Note:	Infrared receiver performance can be degraded if this system is used in close proximity to high-efficiency lighting equipment with solid state ballasts (i.e. high frequency fluorescent).

Infrared Emitter, Model TX6

Dimensions, Weight:	11.125" (28.3 cm) W x 8.125" (20.6 cm) H x 3.25" (8.3 cm) D, 3.25 lbs. (1.6 kg)
Color:	Black epoxy paint with white legends, red acrylic window
Wall Mount:	Omnidirectional mount included for wall and ceiling mounting.
Tripod Mount:	Optional SS-2 Tripod Stand Kit available
Power:	External power supply, 24 VAC, 50 or 60 Hz, 50 VA, 0.9 A nom. current drain Transmitter shuts off when baseband signal is not present
Operating Req.:	0-50° C ambient temperature, non-condensing, non-corrosive atmosphere
Coverage Area:	Single-channel mode: 10,000 sq. ft. (930 sq. m); Two-channel mode: 5,000 sq. ft. (465 sq. m) 50° cone pattern, see coverage diagram

Front Panel:

Power Indicator:	Red LED, visible in lower front of window
Baseband Indicator:	Red LED, visible in upper part of window

Rear Panel:

Mounting Holes:	One set of threaded holes for use with omnidirectional mount (included) Two threaded holes on sides of the cabinet for Tripod Stand Kit
Baseband Input:	BNC connector, 50 Ω , 50 kHz to 1 MHz carriers, 100 mV nominal per carrier, 10 V RMS maximum aggregate baseband amplitude
Baseband Output:	BNC connector, 50 Ω , 50 kHz to 1 MHz baseband
Power Connection:	3-pin molex
Baseband Cable:	RG-58 Coax, BNC-connectors
Power Cable:	NEC Class 2 wiring, 2-conductor, 18 ga.; 200 foot (61 m) max. length (for 18 ga. wire) Wire Gauge Options: 22 ga.: 0-10'; 20 ga.: 0-75'; 18 ga.: 0-200' Each TX6 Transmitter requires its own 24 VAC Power Supply

Two-Channel Infrared Receiver, Model WIR RX5

Size and Weight:	3-5/8" L x 2-3/8" W x 7/8" H (9.2 cm x 6 cm x 2.2 cm)
Color and Material:	Gray, shatter-proof polypropylene
Battery Type:	1.5 V (AA) x 2, Alkaline (BAT 001) or Rechargeable AA Ni-Cad (BAT 026)
Battery Life:	30 hours with BAT 001, 15 hours/charge with BAT 026, 25 mA, nom. current drain
Modulation Frequencies:	95 kHz FM, 50 μ S de-emphasis OR 250 kHz FM, 50 μ S de-emphasis
Signal to Noise Ratio:	60 dB with WIR TX6
Controls:	Combination volume/On-Off knob, Push-button channel selector, Slide switch tone control
Audio Output:	3.5 mm mono mini phone jack, maximum into 16 Ω
Acoustic Output:	130 dB MAX SSPL90 with EAR 013 The RX5 Two-Channel Infrared Receiver can be used with a Neckloop TeleCoil Coupler (NKL 001) to magnetically couple into a hearing aid that has a telephone pick-up coil.

Stereo Infrared Receiver, Model WIR RX6

Size and Weight:	3-5/8" L x 2-3/8" W x 7/8" H (9.2 cm x 6 cm x 2.2 cm)
Color and Material:	Gray, shatter-proof polypropylene
Battery Type:	1.5V (AA) x 2, Alkaline (BAT 001) or Rechargeable AA Ni-Cad (BAT 026)
Battery Life:	30 hours with BAT 001, 15 hours/charge with BAT 026, 25 mA, nom. current drain
Modulation Frequencies:	95 kHz FM, 50 μ S de-emphasis AND 250 kHz FM, 50 μ S de-emphasis
Signal to Noise Ratio:	60 dB with WIR TX6
Controls:	Combination volume/On-Off knob, Slide switch tone control
Audio Output:	3.5 mm stereo mini phone jack, maximum into 16 Ω